RECORDS MANAGEMENT APPLICATION PILOT PROJECT:
BASELINE QUALITATIVE STUDY

T. K. Bikson
RAND Corporation

INTRODUCTION

Networked computers are in widespread use in public sector, and their use is expected to grow as new digital government initiatives emerge. While they enable significant business process improvements, they also engender serious records management concerns. Most organizations' file management and record keeping methods were developed for paper-based records, and are rendered obsolete or ineffective by computer technology. New Records Management Application (RMA) software, however, has the potential to improve the efficiency and accountability of business processes that rely on computers.

For this reason, the Records and Forms Management Division in Michigan's Department of Management and Budget (DMB) is taking the lead in introducing and evaluating RMA software (ForeMost) on a trial basis among employees in DMB's Office of Support Services (OSS). Lessons learned from this pilot project are expected to inform and guide the development of electronic records management procedures more broadly in DMB as well as other Michigan state agencies.

The report that follows provides a baseline qualitative account of information-intensive practices associated with two different business processes prior to the trial implementation of RMA software. A similar qualitative data gathering effort will be carried out after RMA software is installed, in order to learn how it is being incorporated in people's day-to-day work routines, and how it is influencing the conduct of the two focal business processes. The findings should also shed light on characteristics of implementation strategies that are likely to help--or hinder--RMA acceptance and use in state agency contexts.

A companion report provides standardized survey data gathered from a larger group of pilot project participants. Results of the quantitative study will complement findings from the qualitative evaluation.

QUALITATIVE EVALUATION APPROACH

A substantial body of recent research literature converges on the conclusion that successful implementation of new information technologies is dependent to a large extent on how well they fit the work activities they are intended to support, as well as the broader organizational context and culture in which they must be embedded. Often, for instance, work practices must change if the benefits of new technologies are to be realized; a salient example for RMA software has to do with changing file management practices.

The burdens and benefits of these kinds of task and technology changes can best be understood in relation to the business processes of which they are a part. Thus the pilot project team selected two quite different business processes for intensive qualitative study.

Business Processes

The business processes targeted for study include budget preparation, a regularly recurring process, and the forms and publications (F&P) re-engineering project, a one-time effort being conducted by a specially constituted team. These processes differ in a number of ways that could differentially influence the use and usefulness of RMA tools.

On the one hand, budget preparation occurs on a cyclical basis geared to the fiscal year. It is a process that involves regular hierarchically organized interactions among people within OSS. Its nine program managers must prepare program budgets which must be negotiated separately with an OSS financial specialist, consolidated within the broader overall OSS budget, approved by OSS administration, forwarded for review and approval by the DMB director, and ultimately sent on to the state legislature. The process involves extensive analysis and exchange of financial spreadsheet data and relies heavily on the previous year's records of estimated and actual expenditures as a starting point. This year, such analytic activities are accompanied by the development of a text based business case, which serves to justify the proposed budget; the business case also becomes part of the official budget document. The end result of the budget preparation process is an agreed budget document that reflects the work of multiple contributors and countless iterations and revisions until a final version is reached. The finally approved budget becomes the foundation for the next budget preparation cycle. In the interim, it will also serve as the basis for quarterly reporting processes. In this way the final budget may be regarded as a living document that will be a reference point for future activities within OSS.

The F&P project, on the other hand, is organized around a unique goal: to investigate how forms and publications are currently handled, explore options for improving their production and management, and make new procedural recommendations to OSS. When this goal is attained the project team will dissolve. In the meantime, its work processes involve non-hierarchically organized interactions among team members identified on the basis of the special knowledge or expertise they can bring to bear on forms and publications improvement. Their efforts are coordinated through in-person meetings (one or two a month), during which they deliberate, plan, ask questions, determine needs for information or experimentation, and charge subsets of members to carry out particular next steps and to provide feedback at future meetings. The style of work is familiar, but the task itself is substantively unique. In contrast to budget preparation, it is not known in advance just what kinds of information the F&P project will need, milestones for pacing or judging the progress of the work are unclear, and even the amount of time it will require to reach the goal is uncertain. Like budget preparation, this business process too will eventuate in a report that becomes an official document. If enacted, its recommendations will affect not only OSS activities but also its relationships with external forms and publications customers in DMB and other agencies.

The notable differences among the two business processes summarized above suggest that, between them, they are likely to include a fairly comprehensive range of information intensive

work practices. Taking a detailed look at the how the introduction of RMA software works out in these contexts, then, should yield insights helpful to many other DMB business processes.

Participants

Participants in the qualitative study are a subset of the DMB employees who will be trial users in the RMA pilot project. The pilot project includes a total of 63 people, of whom 12 (or, nearly 20 percent) were asked to take part in the qualitative study. Among them, four are engaged in budget preparation; four are involved as members of the F&P team; and four are a part of both business processes. They are drawn from all five OSS Divisions and vary in job type, ranging from senior management to administrative support.

Procedures

Qualitative information was gathered by means of semi-structured interviews. Carried out by an external consultant to the pilot project, these sessions ranged from 45 minutes to an hour and a half in length. Interviews began with questions about participants' jobs in general and roles in the focal business processes in particular. Next the interview inquired in detail about current practices for managing information and communication tasks and probed participants' expectations and concerns about the envisioned new RMA software. It concluded by soliciting participants' implementation advice and suggestions for future assessments of the pay-offs to be gained from introducing RMA software into their computer mediated work.

The presentation of findings below in general follows the order of the interview just described. Because interviews were given in confidence, none of the findings are associated with specific individuals. When quotations are used, they are not attributed; rather, they are provided to illustrate the flavor of the comments made by interviewees.

FINDINGS

Organizational Context

In spite of major differences in the business processes that engage them, participants hold strikingly similar views of their organizational context in general and its orientation to new information technologies in particular. Here we begin with perceptions of the organizational context as it may affect implementation of new RMA software and end with perspectives differentiated by business processes.

Regardless of Division membership or type of job, interviewees consensually view top management as promoting and encouraging innovative uses of new information technologies to improve DMB's business processes. In fact, according to one respondent, everyone "from the Governor on down is highly supportive" of such efforts. This shared view should assist the pilot project in creating a positive change orientation. On the other hand, a number of respondents suggested that DMB is regarded as a controlling and change-resistant culture. Although they noted that the reputation was inherited "from many years back," the phrase "now we have to get it through DMB" is still not uncommon. Within DMB, respondents say, OSS

employees tend not to have college degrees and tend to have worked for the state for a very long time, on average; these circumstances too are interpreted as indicators that the pilot project may face innovation barriers.

Within the organization, according to interview participants, the track record for prior roll-outs of new software is--not surprisingly--mixed. The general conclusion is that any software that is home grown or even largely customized meets with serious implementation problems (or "nightmares," as one respondent put it). On the other hand, standardized software is usually implemented in a relatively smooth way. Thus the degree of customization required for ForeMost installation would be treated as a predictor of implementation ease.

The Records and Forms Management Division will be viewed as the "owner" of the new RMA software, bearing chief responsibility for its introduction into the Department. According to interviewees, this is preferable to having the Information Technology Support Division (ITSD) regarded as the application's owner for a number of reasons. First, the application's success is a high priority for the Records and Forms Management Division, while ITSD's concerns are spread broadly (and thinly, said some) over the suite of information technologies in use. Second, ITSD is viewed as not having an in-depth understanding of specific work done in the divisions; so its staff do not always understand peoples' questions or problems when they are trying to use task-specific applications. Thus users often do not think of ITSD as the best source of help with their electronic work tools.

On the other hand, it should be acknowledged that, according to some interviewees, the Records and Forms Management Division can be seen as "a mini DMB"--that is, as a unit that wants to control things and "make rules for us." But, they noted, the Division's present leadership has done a great deal to overcome that image. In any case, interviewees say, the pilot project team should stress the functionality of the new RMA software as a tool for helping users to manage their electronic information environments and avoid presenting it in ways that make it appear to be a technology for enforcing records management rules per se.

In DMB at present, official information is chiefly stored and managed on paper, even when it is initially created in electronic media (exceptions include some policy manuals and construction codes as well as the final approved budget spreadsheet). As a consequence, users of digital technologies have little prior background for handling electronic material of record. More to the point, they do not hold shared conceptions of what is or is not a record (it is a "hard concept," and "we don't think of ourselves as dealing with 'records'"). Additionally, filing and file management are generally perceived as chores that are unengaging in nature and low in priority ("we have to bite the bullet and deal with it," and although it will probably be a good thing "it's hard to devote the time to it"). Establishing an electronic records management culture, interviewees believe, will be one of the hardest but most important tasks of the pilot project team.

The preceding summary of interviewee responses to questions about the organizational context for implementation of new information technologies reflects, as suggested earlier, more similarities than differences. However, one organizational factor seems to distinguish between budget preparation processes and activities of the F&P team in ways that are relevant to the use

and usefulness of RMA software. Simply put, budget preparation is essentially an "inward facing" business process; although, in the end, the final budget must eventually be accepted by the state legislature, all the intermediate steps in the process involve regular hierarchical interactions that follow internal organizational reporting lines. In contrast, members of the F&P team are frequently concerned with "outward facing" activities that cross divisional and departmental boundaries. These interactions with individuals or units outside the boundaries of their own divisions do not follow hierarchical lines but rather are like customer-oriented processes and transactions.

Such differences in orientation between the two focal business processes give rise to different emphases with respect to critical information tasks and RMA software uses. For instance, discussions of budget preparation efforts inevitably invoked concerns about version control ("Do I ever know if I have the latest version?" "Can I be sure I've captured all the revisions everyone's sent?"), about automatic and reliable shared storage ("Important information stored only on a PC hard drive is an accident waiting to happen"), and about maintaining links between changes in budget figures and relevant updates to text-based budget justifications. On the other hand, conversations about F&P activities invariably raised concerns about the ability to access information about ongoing work--for purposes of managing and tracking the status of particular jobs, knowing where the work is located, sharing information between shifts, and being able to give consistent, quick and accurate responses to customers' questions whenever asked.

It should be underscored that these are differences in emphasis rather than incompatible demands on new RMA software. They point to a range of electronic information management functions that the system should be able to support or enhance. As the discussion of current electronic information management practices below suggests, most employees are aware of many areas in which their current practices could be improved.

Current Electronic Information Management Practices

It is not easy to characterize electronic information management practices as they are being carried out today by interview participants because they are highly individualized and not usually systematic. This is not surprising in light of how the use of general computerized office work tools have evolved.

How the Present [Non] System Emerged

In the old days (the early 1990s), according to one respondent, "if you created it, you could always find it." But now, huge increases in the volume of email and e-documents mean that a better system for organizing electronic information is needed. And, as one F&P team member pointed out, if its project is successful e-forms will start to generate additional multitudes of electronic records in place of completed paper forms. (On the other hand, this interviewee noted, ideally e-forms would be self-filing--they would "know where to go" within an RMA environment, partially offsetting problems created by greater volumes of electronic records.)

Further, information handling tools have been acquired throughout the organization by simple accretion ("these tools just arrived and people got them without a program of training in their

use"). Unlike critical work flow applications (e.g., the inventory system), their use has been largely optional and individualized rather than standardized. So available information management tools are frequently underused, if they are used at all (see below).

Finally, employees are not clear about what to save and what not to save, how to organize saved material, or how long to keep it before getting rid of it. The general rule, said one interviewee, is "you sort when you have the time, you purge when you have the time." The outcome is that individuals' electronic information management practices have not been able to keep pace with the burgeoning flow of electronic data and documents. Many public sector organizations have undergone similar evolutions, eventuating in a similar need to rationalize their digital work environments.

Files, Folders and Information-Finding

Against the background outlined above, it is probably clear why--according to interview participants--there is very little use of folders and subfolders to help organize saved electronic material. It should, however, be noted that some individuals have already begun to create folders and change their filing practices after presentations from the RMA pilot project team, although these efforts are still far from the norm.

Often, email "piles up" in one large in-box queue that can be searched or ordered by dates or senders. For other files, naming conventions are the key to organization. The extent of systematization and standardization of file-naming conventions appears to vary by work unit and type of task. For example, budget spreadsheets are likely to have detailed name extensions that systematically reflect programs and dates of revision or updating; on the other hand, related text documents may not have file names readily associated with those datasets and changes to them. And in any case, the particular features of the naming convention may vary from one individual or program involved in the budget preparation process to another ("managers file things their own way now"). For task activities associated with external customers (see the F&P process discussed above), in contrast, files related to particular types of work products for specific clients have commonly understood names and are stored on a shared server so that anyone with responsibility for the task can find them and answer questions as needed. But other material (e.g., technical notes, miscellaneous documents not related to client work) is not filed in common ways across employees.

There is, then, considerable variation in extent of systematization and standardization of file names and folder use on the part of individuals and Divisions, as well as variation in reliance on shared storage (see below). Many respondents therefore reported at least occasional problems with finding information they were certain they had kept, or having to redo the work because they couldn't find it. Others said they probably had duplicate files under different names (usually not intentionally). A telling example of problems of information organization came from one interviewee who had inherited the electronic information stored by a predecessor. This manager described "guessing one's way through [another person's] files, not being sure of what was saved or deleted, or why."

Information Sharing and Shared Storage

Although the currently available information system now provides for shareable folders on common servers, digital data and documents are typically made accessible to other employees via email distribution. Although this mode of information sharing probably means that many copies of the same material are being saved by different individuals (potentially leading to version control problems), it is chosen for several reasons. First, as noted earlier, not all work groups have developed standardized file names and procedures; without such practices, it would be difficult to rely on shared folders to give many individuals access to the same information. Second, access to shared folders depends on being in the same work unit and making use of a common physical server, so any collaborative tasks that span work units are better off depending on email for information sharing purposes. Third, few individuals are authorized to create shared folders on common servers; for most employees, therefore, email becomes the default mechanism for information sharing.

Consequently, while many individuals use the shared servers, they usually store electronic documents and data in their own personal space. Material stored on servers is backed up by technical staff and is less susceptible to unintended deletions or other accidental loss. Typically, then, copying information to a server from an individual C:\ drive is done for purposes of back-up or security rather than to facilitate information sharing. There do not seem to be well established criteria across the Department for what material should be protected by being copied to a server and at what intervals. Some interviewees (see above) noted that important electronic material may well be put at risk by the lack of rules and routines for timely frequent transfer from local storage to servers.

RMA Software: Expectations, Concerns and Questions

One objective of the baseline qualitative study was to learn about pilot project participants' initial attitudes toward RMA software. Interviews therefore probed for anticipated benefits, pitfalls and uncertainties about the new technology.

Expected Benefits

A majority of interviewees believe that the first beneficial effect from the pilot project will be "less chaos" and better organization in everyone's individual stores of electronic information. Saved digital documents and data, and especially saved email, should become easier to search and easier to find. These improvements are viewed as only indirectly associated with RMA software; that is, introduction of such software requires the prior development of file management plans and calls people's attention to ways that use of folders and filing systems can help support information work. That message, already being communicated by the pilot project team, is expected to have positive spill-over effects even when employees are not dealing with official record material.

These same benefits are, not surprisingly, expected to characterize shared electronic information resources but to be even more significant at the group level, once RMA software is in use. The adoption of standardized file plans, naming conventions and access permissions not limited by

arbitrary physical boundaries (i.e., the particular server to which an employee is physically connected) will make information easier to search, locate and use no matter what individual or Division created it. And automatic version control is expected to eliminate guesswork about which document in the RMA system is the most recent.

Besides making it easier to locate and use version-controlled information in shared stores, RMA software implementation is also expected to result in reduced duplication of saved material. An official memorandum, for instance, could simply be placed in a folder shared by all the intended recipients; then an email message could announce its presence and location. Employees could read it online or print it for off-line reading; but there would be no need to email it to everyone to save, and no need for individuals to store it in their own personal spaces for future reference.

Further, like the present system, the new system would afford reliable secure protection and back-up for material saved on the servers; the main differences would be its rational organization of the saved material, along with broadened access and more regular use. As more and more official material is prepared and shared electronically, use of the new RMA software could relieve individuals of the obligations associated with its retention and protection for accountability purposes.

Thus, although the initial effects of new RMA software are expected to be visible chiefly in individual improvements in information work practices, the major benefits in the longer term should be manifest in group tasks and organization-wide process improvements. In general, respondents believe that the new software should make shared iterative or distributed work more effective and easier to coordinate--and improvements should be more noticeable the more the work crosses functional or divisional lines, the more it is interdependent, and the more it is dynamically generated or unpredictable. In particular, the new software should facilitate managers' review and tracking of ongoing work across individuals and tasks, and should allow them to answer questions about the status of group work quickly and correctly at any point in the business process.

Concerns

Besides asking about likely positive effects, interviews inquired about anticipated pitfalls or problems that RMA software implementation might confront. These questions surfaced concerns that would probably accompany the transition to any new software application as well as issues associated specifically with an RMA system.

The generic concerns begin with questions about user buy-in--few employees have directly experienced a need for records management tools in their own work (see also the comments above on lack of clarity about records in general), and all employees have some method in place for coping with their electronic information. "If it ain't broke, don't fix it," said one respondent, using this expression to call attention to the seeming absence of necessity for change. In the absence of such a felt need, resistance to change should be expected (see also the comments earlier about DMB as a change-resistant culture). Further, considerable training and learning will be required, not just in relation to the software but also in relation to records management concepts and methods. Moreover, at present there are highly variable levels of computer skill

among employees, so that users are not all starting from the same place. And ITSD help support staff also have a learning curve to travel when a new application is introduced--so they are likely to be the least effective at the time when help is needed most.

As explained, such obstacles would likely surface in the introduction of any new information technology. However, two sets of issues are more intrinsic to RMA software. The first has to do with control over work organization and creation of shared folders.

To begin, many individuals may see the use of an RMA as tantamount to giving up control of their information environments; this perception will be heightened if the Forms and Records Management Division (and only that Division) has the authority to create shared folders in the RMA system. (The concern is also probably exacerbated by the image, noted above, of DMB in general and Records and Forms Management in particular as being controlling rule-making entities.) In the second place, interviewees wonder whether the RMA system will meet the unique filing demands of their own work processes or specific projects; these questions arose most frequently in work units that already had fairly elaborate file-naming systems in place to support their tasks. Third, and most significant, a sizeable number of interviewees want to have (or retain) the ability to create shared folders in the system without first going through Records and Forms Management. Some cited a need to be able to create shared files and folders on the fly for customer-driven or project-driven work; others say it is important to be able to do so at any given moment when a task is underway. Still others found it difficult to believe that, at the point in time when RMA usage becomes widespread, Records and Forms Management staff would even be able to keep up with the folder-creation load. Interviewees do not object to Records and Forms Management taking the lead in developing file management plans and creating folders for the system initially, to jump-start its usage. But they have strong reservations about whether Records and Forms Management could, or should, handle RMA folder creation over time for all the Divisions.

The other set of perceived RMA pitfalls have to do with the system's ability to handle working documents or to be integrated with other systems that support working documents. Many of the software's expected benefits have to do with making current information available in a timely, organized and documented way to all participants involved in a shared task. Interviewees are not clear about the point at which, in the preparation of electronic material, it would enter the RMA system. If the material is not filed in the system until it is complete and finalized, then those working on it will not realize many of the hoped-for benefits--version control, ability to track work in progress, and so on.

On the other hand, given the multitudes of little changes made to huge graphics files, for example, or the dynamically interlinked changes among millions of numbers whenever a big budget spreadsheet is revised, it is not clear how a system could manage and document such activity on an on-going real-time basis. Participants in the budget preparation process also raised concerns about how the RMA software would link spreadsheet data with associated business case information and how the "living budget document" (i.e., the quarterly updated material) would be managed while the original final budget was also maintained.

While graphics and spreadsheets represent extremes of version control problems, similar questions emerge in relation to regular text documents that are developed by a group (e.g., preparation of a Request for Proposals). In the context of text preparation, interviewees also wondered about ease of integration of RMA software with document management software (e.g., FileNet, Documentum, etc.), if the latter has to handle most of the coordination support for group text preparation work. The point being made is that if RMA software does not serve to support routine document management needs, it must be effortlessly integrateable with the software that does, or its use will be more of a burden than a benefit. Addressing these potential pitfalls will be important for assuring that RMA software, in the words of one interviewee, "can help day-to-day work" instead of mainly "serving the needs of documentation" after the work is done.

Questions

Besides identifying perceived prospects and pitfalls associated with new RMA software, the interviews served to elicit questions about how the proposed system would function. The most frequently occurring questions can be organized around four general interrelated points about which future RMA users would like more information.

Potential users, first, would like more information about how the system will handle access privileges and privacy protections. It is assumed that not everyone will have access to all official information in the system all of the time. But it is unclear to pilot project participants how rules about access to digital material stored in the system will be devised, disseminated, maintained and modified over time.

A closely related point has to do with how the system will handle permissions to alter existing versions of electronic data or documents in the RMA system or to enter an entirely new version. Again, participants assume there will be some regular way to determine who has such capabilities and under what conditions. They would like more information about these permissions and also about the kinds of feedback the RMA software will provide to users (e.g., will it let users know that they can't work on a document because someone else is currently editing that material, for instance, or will it warn users that they are attempting to edit an already outdated version of a document, and so on). These questions also underscore the need to clarify differences between document management and records management procedures.

Next, project participants want to know whether, and if so how, the RMA system would accommodate electronic signatures. For some kinds of documents or purposes, according to users, it will be important to know that a particular authorized person has signed (this includes not only people internal to DMB but also external clients engaged in what could become something like an official transaction).

Finally, pilot project participants want to understand better the legal status and implications of official electronic records. What new kinds of accountability are entailed for individuals, Divisions or the Department? How should official correspondence sent or received by email be handled, from the standpoint of the new RMA system? And how, if at all, does the need to store official records in digital form in an RMA system affect legal responsibility and liability?

The last two sets of questions summarized above underscore themes raised earlier in this report. One is that most employees do not have a clear conception of what it means to call some item an "official record"--what are the implications of that designation, and for whom. The other theme underlying these questions has to do with whether the new system can be a helpful support for information-intensive tasks or will have more limited utility as a method for official documentation of information products that may create additional work with little perceived benefit for users.

Implementation Strategies and Outcomes

The last series of questions in the qualitative baseline study sought pilot project participants' advice in two areas, based on their prior experience with software roll-outs and their preliminary understanding of the RMA software they would soon be asked to use. The interviews, first, asked for implementation strategy recommendations--what steps should be taken to promote the successful adoption and use of the RMA software? Finally, the interviews asked for credible success indicators--what would constitute objective evidence of positive RMA implementation outcomes? Participants' answers are summarized below.

Implementation Strategy Recommendations

Scheduling and timing recommendations were provided by a majority of interviewees. High on everyone's list is allowing enough time for implementation; setting unrealistic deadlines and having to rush, they say, leads to confusion and resentment. People also want to be told when schedules slip or are changed. Closely related is the suggestion to consider users' work cycles; in budget preparation, one interviewee commented, "timing is everything," meaning that during some periods intense work pressure would likely preclude the possibility of learning new procedures. In any case, respondents suggest that the pilot project team help people establish good fall-back options so that Divisions can get their regular work done during the time when they are transitioning to the new RMA software. Finally, interviewees recommend starting with the simplest or most basic steps in RMA use, relying on the stage-wise introduction of successively more advanced procedures. They believe an incremental strategy will be good for everyone but will be especially helpful for overcoming potential problems associated with differing initial levels of computer skill.

Another type of advice centered on communication, training, and help support. Frequent communication, in regular bite-size amounts, from the pilot project team is highly valued by interview participants; as one noted, "they're already doing the right things" in this area and should keep it up (the list-serve got very high marks). Interviewees also recommend providing a great deal of initial training, along with one or more follow-up visits after intervals of use (to reinforce what people know, introduce new techniques, and assure the system is being used as intended). The pilot project team should not make the mistake of "assuming that the system will be transparent to users," but rather should make "how it works" information available in clear terms (user manuals should enable easy look-up of frequently done processes, for instance). Continuing communication following the initial training period is also suggested--informational updates might focus in more detail on the kinds of questions noted in the preceding section (e.g., access permissions or security protections might become targets for follow-up communications).

Having a really robust help system in place is also seen as essential to successful implementation, especially because in the beginning people won't always know how to ask the right questions to overcome their difficulties.

The software itself also figured in respondents' implementation strategy recommendations. As a first step, according to interviewees, the pilot project team needs to be sure it has a really solid understanding from the vendor about what the software actually delivers and just how it works. Second, the team itself has to get to know the product very well and to make sure, during the implementation process, that it functions in the desired ways. The project team should be prepared to surface software pitfalls early in the trial period and get them repaired, and should also be prepared to junk the product if it turns out not to be right for DMB. And, throughout the pilot effort (and during subsequent roll-outs if the product is retained), the project team should do its best to assure that the RMA software is high in ITSD's priorities for support.

A fourth set of recommendations has to do with engaging users in the implementation strategy itself, an approach highly favored by most interviewees. They said, for example, that "users need to feel the implementation process is open and that they have a lot of say in it"; "'push-outs' can create distrust and resentment." Instead, users need to have the sense that "something's coming and I'm involved." A related point has to do with shaping the software and associated procedures to the business processes (instead of the reverse) and with accommodating user-generated innovations into how the system functions over time. Examples provided in interviews include developing viable options for users to create folders in the RMA system; making it possible for docking stations to dock to shared RMA servers so that official work can be taken home easily for review and analysis; and putting one or more years of extant records on the system to enhance its value to users from the outset, given that it is least needed for newly created material.

Because users themselves are often the origin of the best suggestions for innovative and work-enhancing ways to use new software, several interview participants also emphasized that user groups should become a key part of the implementation strategy. Interviewees recommend that some representatives from Records and Forms Management regularly attend ForeMost user group meetings and that interested pilot project participants from other Divisions be encouraged to attend as well. In addition, they suggest bringing in RMA software users from other organizations to talk about their experiences. Other users will probably be viewed as more candid about the advantages and disadvantages of any proposed new software than its proponents or ITSD, and users can learn a great deal from one another. In the end, the project team should be prepared to make software modifications and improvements based on what was learned during the pilot period; and, say interviewees, pilot users should be the first to receive those upgrades.

A last set of recommendations has to do with incentives for RMA use and disincentives for non-use. One respondent referred to the latter as "teeth," explaining that if the system is important to DMB business processes, "there have to be some negative consequences for non-use." For instance, liability for failures to establish records of decisions or actions would count as teeth, since no one would want to be responsible for getting the Department into legal trouble. On the other hand, most respondents mentioned the importance of perceived advantages from RMA

use. Demonstrable positive benefits must become visible to users within a reasonable time period (interviewees suggested six months or so as a good target). As one participant put it, "good file plans and retention schedules are important for agencies, but individuals must see advantages in their own work" if the implementation effort is to succeed.

Suggested Outcome Measures

At the end of the interview, participants were asked to put themselves in the position of the pilot project team and address the question of where to look for tangible pay-offs from RMA use. If they were conducting the evaluation, where would they look for outcome measures? In many respects, their responses reflect the expected system benefits (see above), but they give more emphasis to what is demonstrable. Suggested types of outcomes can be grouped into four general categories.

First, many interviewees stress system use per se as an outcome. As one individual put it, users will be able "to vote with their feet." That is, use of this application will be voluntary rather than necessary for getting work done (in contrast to a critical work flow application, where doing the job entails using the system). Under such conditions, the nature and extent of use of the software should be treated as outcome measures. Such measures could probably be obtained from system logs, supplemented by user surveys.

A second set of outcomes primarily has to do with efficiency-oriented improvements to individuals' work that would result from a better-organized electronic information environment. Expected benefits include ability to search saved material rapidly, ability to find sought-for information faster, reduced duplication of stored material, and less unintentional loss of data or documents. Some of these outcomes could be assessed with experimental trials using a small number of representative standardized tasks on a pre-RMA and post-RMA basis. Others, such as loss of saved electronic material, could more readily be tapped with self-report measures.

Interdependent group work forms the focus of the last sets of suggested outcomes for evaluation. Members of the F&P project team cite the capacity to coordinate work that spans organizational unit boundaries better. They also emphasize the ability to answer questions rapidly and correctly about the status of shared tasks--including tasks done by other people or during other shifts. While these kinds of outcomes could be assessed using experimental tasks and self-report data, interviewees believe that the true success measures will be increased credibility in the eyes of clients and improved quality of customer service.

Participants in the budget preparation process also emphasize group task outcomes, but with a somewhat different orientation. That is, they tend to cite greater confidence about working on an up-to-date version of a spreadsheet or a business case that captures all prior revisions by varied participants in the process. They also emphasize improved managerial oversight and tracking capabilities--for instance, being able quickly to determine the status of current expenses against budgeted expenses. Such outcomes too could be measured with a combination of experimental tasks and self-report measures.

In the long run, most participants commented, any outcomes that can be measured in the framework of a pilot project will be limited and unlikely to reflect the full long-term value to DMB and to the State of having a robust electronic records management system in place.

DISCUSSION

The baseline interviews yielded thoughtful and insightful comments that merit careful consideration by the project team.   Preceding sections of this report synthesize and organize that material.   This closing section is intended to call attention to some of the most salient points.

First, there was universal agreement among interview participants that electronic information could be organized, managed and shared more efficiently. If RMA software can help individuals cope better with burgeoning flows of digital data and documents, it will be a welcome addition to their suite of work tools.

Giving special attention to two different business processes proved helpful for identifying different kinds of interdependent work and the varied ways RMA software might enhance shared tasks. In the budget preparation process, for instance, what was most noteworthy is the need for version control, for systematic linkages between spreadsheet data and business case documents, and for the capability to maintain a "living document" (quarterly updates to the dataset and the business case) in addition to the version that was finalized prior to the start of the fiscal year. Budget preparation may be viewed as a regular, cyclic inward-facing process. Members of the F&P team, in contrast, are more typically involved in variable, demand-driven outward-facing processes. They single out the need to coordinate work across Divisions, to track processes in real time, and to access shared task information in order to be able to answer customers' questions. Participants in both business processes underscore the potential value of a records management system for managerial oversight.

The pilot project participants, then, can envision many potential advantages for both individual and group work as a consequence of RMA software implementation. On the other hand, implementation efforts will have to cope successfully with two critical issues. One turns on the authority to create group folders. For reasons outlined in the report, Forms and Records Management should explore ways to delegate that authority while maintaining oversight and responsibility for essential features of the records management system (retention/destruction schedules, metadata, and so on). The other key issue has to do with how well RMA software can deliver, or help to deliver, the kinds of anticipated benefits to individual and group work summarized above and presented in more detail in the report. The pilot project team should explore ways of modifying the software to accommodate work in progress or of integrating it with document management software that helps organize work in progress in ways that are fairly seamless from the user perspective.

Finally, interviewees provided highly constructive advice about implementation strategies and outcomes. Expressing appreciation for the outreach and communication activities already undertaken by the pilot project team, respondents encouraged continuing interaction with users

throughout the trial period. They also urged putting DMB users in touch with broader ForeMost user groups. Most importantly, perhaps, interviewees recommend a participatory approach to system modification and improvement, so that user experiences and user-generated innovations become a part of the post-pilot RMA environment. They produced a number of ways in which individual and group outcomes associated with RMA use could be assessed, and would probably cooperate with such evaluation procedures. A multi-method approach relying on a combination of system usage logs, experimental tasks and self-report measures will be most suitable for producing credible evidence of RMA software implementation success.